

STATE OF ILLINOIS
ILLINOIS COMMERCE COMMISSION

ILLINOIS COMMERCE COMMISSION	:	
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On Its Own Motion	:	
	:	
v.	:	
	:	
COMMONWEALTH EDISON COMPANY	:	
Order Requiring Commonwealth Edison	:	Docket No. 22-0486
Company to file an Initial Multi-Year	:	
Integrated Grid Plan and Initiating Proceeding	:	
to Determine Whether the Plan is Reasonable	:	
and Complies with the Public Utilities Act.	:	
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COMMONWEALTH EDISON COMPANY	:	
	:	
Petition for Approval of a Multi-Year Rate	:	Docket No. 23-_____
Plan under Section 16-108.18 of the Public	:	
Utilities Act.	:	

Direct Testimony of
CRAIG CREAMEAN
Vice President
Distribution Grid Operations
Commonwealth Edison Company

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I. INTRODUCTION, BACKGROUND, AND SUMMARY

A. Witness Identification

Q. What is your name and what is your business address?

A. My name is Craig Creamean. My business address is 1700 W Illinois Hwy, Joliet, IL 60433.

Q. By what entity and in what position are you employed?

A. I am employed by Commonwealth Edison Company (“ComEd”) as its Vice President, Distribution System Operations.

B. Purpose of Direct Testimony

Q. What is the purpose of your direct testimony?

A. I introduce and provide an overview of ComEd’s Multi-Year Integrated Grid Plan (“Grid Plan”), ComEd Exhibit (“Ex.”) 5.01, and review key features of the Grid Plan that are designed to address grid planning requirements of the Climate and Equitable Jobs Act (“CEJA”).¹ I highlight how the Grid Plan not only meets those requirements but demonstrates our broader commitment to meeting Illinois’ energy policy objectives, many of which are reflected in CEJA, while continuing to improve the quality, efficiency, and value of our utility service. I also explain how, in my professional opinion, ComEd’s Grid Plan contains each of the components that I understand are called for by the specific statutory requirements of CEJA as I, a utility engineer, understand them.

¹ Public Act 102-0662.

I also explain that approval and execution of the Grid Plan will create jobs and workforce development opportunities related to the transition to a decarbonized grid, and explain ComEd's approach to safety, resiliency, and physical and cyber security.

C. Background and Qualifications

Q. What are your duties and responsibilities at ComEd?

A. As Vice President, Distribution System Operations, I have executive responsibility for the Operations Control Center ("OCC") and the Emergency Preparedness ("EP") organizations.

The OCC is responsible for the day-to-day monitoring and operations of the distribution grid, including the safe and efficient response to system events and conditions, and directs all field response for both planned and emergency work on ComEd's distribution system. I am responsible for developing the vision and executing the strategies for the OCC of the future, which includes planning for an electric grid that is being transformed by rapid growth in renewable energy, electric vehicle adoption, and other emerging energy storage technologies.

The EP organization develops and executes the processes and procedures necessary to respond to existing threats to the grid (such as major storms and other natural disasters) as well as new threats emerging from the physical security, climate, and cyber domains. In this capacity I provide leadership and guidance to the ongoing collaborative efforts between ComEd and state and federal agencies, industry experts, and our local communities to prepare and enhance disaster response.

41 Q. **What is your professional experience?**

42 A. I have over 32 years' experience working in different departments at ComEd that cover the
43 full range of functions addressed in ComEd's Grid Plan, including operations, planning,
44 and engineering. I have held the role of Vice President of Distribution System Operations
45 at ComEd since 2019. In this capacity, I have helped to lead the improvement of ComEd's
46 Customer Average Interruption Duration Index ("CAIDI") from top decile performance to
47 best-in-class performance.

48 Before assuming my current role, I was the Director of Regional Electric
49 Operations in ComEd's North Region where I was responsible for ComEd's Regional
50 Engineering, New Business, and the Overhead and Underground Construction
51 departments. Previously, I served as the Director for ComEd's Advanced Metering
52 Infrastructure ("AMI") Project, where I oversaw the successful deployment of over 4.2
53 million AMI ("smart") meters across the entire ComEd service territory. This was one of
54 the largest smart meter deployments in the nation at the time and was accomplished under
55 budget and ahead of schedule. Earlier in my career, I served as a Senior Manager in
56 Operational Strategy & Business Intelligence, Senior Manager in Substation Operations in
57 Chicago Region, and held managerial positions in various operations and engineering
58 departments.

59 Q. **What is your educational background?**

60 A. I hold a Bachelor of Science in Electrical Engineering from the University of Notre Dame.

D. Itemized Attachments

Q. What exhibits are attached to your direct testimony?

A. The following exhibits are attached to my direct testimony:

- **ComEd Ex. 5.01** is ComEd's Multi-Year Integrated Grid Plan; and
- **ComEd Ex. 5.02** is a table with detailed cross references between the requirements of Section 16-105.17 of the Public Utilities Act and the sections of the Grid Plan.

II. COMED'S MULTI-YEAR INTEGRATED GRID PLAN

A. Overview of the Grid Plan

Q. Can you describe ComEd's Grid Plan?

A. Yes. ComEd's Grid Plan describes the investments that ComEd will make over the next five years to maintain its focus on efficiency, reliability, resiliency, and safety, while advancing towards the decarbonization and equity goals outlined in CEJA. For decades, ComEd has been responsible for ensuring that the distribution grid operates efficiently, reliably, and safely. With the passage of CEJA, ComEd has been assigned additional responsibilities, including preparing the grid to accommodate 100% carbon-emission-free electricity, accelerating beneficial electrification, and providing additional transparency and oversight to stakeholders. In alignment with CEJA, ComEd's Grid Plan is designed to cost-effectively integrate the State of Illinois' goals with respect to equity, affordability, resiliency, reliability, renewable energy, energy efficiency, and beneficial electrification.

The Grid Plan includes an explanation of the considerations and methodologies ComEd uses to identify and prioritize the investments it must make in the distribution system, as well as information regarding how ComEd oversees and coordinates work on

its distribution system to ensure operational efficiency and value for customers. In addition, the Grid Plan includes a detailed description of the specific investments that ComEd anticipates making over the coming five years.

Q. What is ComEd’s goal in providing this Grid Plan?

A. We want to provide ComEd’s customers, communities, and stakeholders with a thorough understanding of the grid planning process and a substantive account of the investments needed to maintain core service requirements and meet Illinois’ energy and environmental objectives. The needs of our customers are at the center of the grid planning process, and this Grid Plan shows how we engage with our community partners to ensure these investments provide benefits equitably to the customers and communities that we serve.

The Grid Plan is designed to provide reliable and affordable electric service while enhancing community resiliency against the impacts of climate change. As is the case with much of the North American electric grid, most of ComEd’s grid infrastructure was designed and deployed before the recent wide-scale integration of distributed energy resources (“DERs”) or the recent rise in electrified transportation. To prepare the grid to meet the evolving needs of our customers, the Grid Plan lays out forward-looking investment strategies including monitoring, protection, automation and control technologies, communication systems, and supporting analytic solutions. These strategies, coupled with ComEd’s expertise as a leader in grid operations and proven ability to deliver operational excellence, will enable ComEd to continue to provide safe, reliable, and affordable power to its customers, while ensuring and promoting equitable realization of investment benefits, job creation, and economic opportunities that uplift the communities

that we serve. It also specifically addresses how our investments and planning process enhancements reflect ComEd's commitment to deliver benefits to all its communities with special attention to ensure that benefits flow equitably to our customers in Equity Investment Eligible Communities ("EIECs").

This Grid Plan is ComEd's first filing of its kind under CEJA's new regulatory model, which allows us to also utilize a multi-year rate plan option to fund these investments. ComEd's Grid Plan demonstrates a commitment to meet new and evolving objectives that support Illinois' policy goals while continuing to provide safe, resilient, reliable, and affordable electric service.

Q. How does the process of grid planning impact reliability?

A. Overall, ComEd ensures the reliability of the distribution grid by making strategic investments that address obsolescence and degradation, as well as targeting continuous improvement in the grid needed to mitigate the impact of climate change and facilitate decarbonization strategies. Our planning process is therefore essential to ensure that we are monitoring and evaluating the health of our system assets for now and the future.

Q. What does the planning process lead to in terms of investments that support reliability?

A. Our planning processes lead to investments that include the upgrade and replacement of poor performing or obsolete infrastructure in the overhead and underground electric grid. Additional investments to improve the distribution system include distribution automation, monitoring equipment, associated communication infrastructure, and circuit reconfigurations. These investments maintain and improve customer reliability and

operational flexibility. These same investments can address underperforming circuits and pocket areas with reliability concerns.

Finally, the Grid Plan also describes investments in substations to maintain and improve reliability, resilience, and physical substation security, reduce fire-related risk, and comply with Environmental Protection Agency regulations. Additional investments in protection and control help improve and modernize the equipment responsible for the safety of the grid, including replacing obsolete relay and Supervisory Control and Data Acquisition (“SCADA”) system equipment with modern microprocessors-based protection relays and SCADA equipment.

Q. How does the Grid Plan support the State’s policy goals of decarbonization and an equitable transition to a decarbonized economy?

A. There are several ways ComEd’s Grid Plan can advance decarbonization goals. For example, we know that DERs are an important means of decarbonizing the electric system, and are foundational for the future composition of the grid. Although the adoption of customer-owned and operated DERs is ultimately outside of ComEd’s control, the Grid Plan shows how we will facilitate integration of these advanced and beneficial technologies while maintaining grid safety and reliability. ComEd makes prudent and targeted investments across multiple categories as detailed in the Grid Plan to ensure that we continue to deliver our service at minimal cost to our customers. In addition, ComEd witness Owens (ComEd Ex. 10.0) provides more detail on our work to support low- and moderate-income (“LMI”) customers during this transition, and discusses programs that provide financial flexibility to EIEC and LMI customers.

149 Q. **How will ComEd's Grid Plan support EIEC investments in decarbonized energy**
150 **sources?**

151 A. We know that not all customers can install DERs such as rooftop solar that can help
152 accelerate the decarbonization of the grid. We are fully committed to support customers
153 that are facing high barriers to entry with respect to participating in the transition to a
154 decarbonized grid by offering a large portfolio of programs as described in our Grid Plan.
155 Enabling equitable participation in the transition to a decarbonized energy sector is a
156 priority, especially for under-resourced communities.

157 There is the potential for a growing divide in the cost of service between customers
158 who are financially able to participate in the energy transition on their own, and those who
159 are dependent on external support (including from ComEd), to do so. Higher income
160 residential customers, especially those who own their homes, are more likely to invest in
161 DERs such as rooftop photovoltaic ("PV") systems, storage technologies, and electric
162 vehicles ("EVs"). This enables them to manage their load profile and take advantage of
163 potential structural billing benefits such as net metering, which may result in a cost shift
164 onto under-resourced customers. The ongoing energy transition in Illinois requires
165 aggressive actions to protect under-resourced customers from unequitable cost shifts and
166 bill impacts. Our Grid Plan describes ComEd's effort in maximizing equity in the
167 decarbonization transition.

168 Q. **How did ComEd develop the Grid Plan?**

169 A. This Plan was developed after engaging with stakeholders, participating in workshops
170 convened by the Commission, drawing on ComEd's core competency of grid planning,

171 and continually refining our existing internal investment planning processes to best meet
172 Illinois' energy policy goals and CEJA's requirements. ComEd's engagement with
173 stakeholders both at the grid workshops and outside the workshop setting is described in
174 the direct testimony of ComEd witness Patrick Arns (ComEd Ex. 7.0).

175 Grid planning is a core function of ComEd, and a central step in meeting its service
176 obligations. ComEd's grid modernization and smart grid investments over the past ten
177 years have significantly enhanced the capability, efficiency, reliability, and resiliency of
178 the grid. As impacts from climate change, beneficial electrification, increased DER
179 adoption, and evolving customer needs expand, ComEd must continue to innovate and
180 improve the operating capabilities needed to address these challenges.

181 The Grid Plan builds on ComEd's well-established investment planning process,
182 including an updated version of its Long Range Plan, which incorporates a rolling, five-
183 year, forward-looking process to evaluate proposed investments through a series of
184 rigorous reviews by distribution planning, engineering, and operations experts. ComEd's
185 Grid Plan investments are built on proven engineering processes that manage asset health,
186 forecasted loads, and operational capabilities. These processes incorporate grid modeling
187 and simulation, risk analysis, and the identification of high-priority areas and needs. The
188 selected investments reduce the risk of the grid failing to perform its functions as designed
189 as well as to manage the future changes stemming from the transition to decarbonization.

190 **Q. How did ComEd incorporate stakeholder feedback into the Grid Plan?**

191 **A.** Integral to the Grid Plan process was ComEd's active participation in a series of CEJA-
192 required grid workshops conducted by the Illinois Commerce Commission

(“Commission”) Staff. ComEd participants included engineering, legal, and regulatory personnel and additional subject matter experts on specific topics, such as energy efficiency and low-income programs. These workshops provided the opportunity for ComEd to educate and inform stakeholders about ComEd’s system and its process for determining necessary capital investment to continue to provide safe and reliable service. ComEd also provided data to various stakeholders in response to formal data requests and email inquiries. The workshops also provided an opportunity to gain input from stakeholders regarding their proposed system improvements and related ideas. Of course, discussions also included the anticipated investment necessary to meet CEJA’s requirements. ComEd subsequently considered the ideas and feedback from stakeholders participating in that process with ComEd’s existing system and planning processes to develop a Grid Plan that conforms with Illinois’ energy policy goals and CEJA’s requirements.

B. Structure of the Grid Plan

Q. How is ComEd’s Grid Plan organized?

A. The Grid Plan is organized into chapters to provide the Commission and stakeholders an overview of the grid investments planned across these five years in a narrative form, while also providing special consideration to the topics enumerated in CEJA that a multi-year integrated grid plan must address.

Chapter 1 introduces ComEd’s Grid Plan vision, which builds on our core mission of delivering safe and reliable electric service, including investment strategies that will meet Illinois’ goals for decarbonizing the energy sector and the other priorities described in CEJA. This includes enabling efficient integration of DERs, accelerating beneficial

215 electrification, and ensuring and promoting equity, job creation, and economic
216 opportunities that uplift the communities that we serve. ComEd customers are at the center
217 of our grid planning process and the Grid Plan discusses how we continue to strengthen
218 community partnerships to ensure equitable service across our territory.

219 **Chapter 2** discusses ComEd’s integrated distribution planning framework and
220 investment planning approach, which ComEd uses to plan the distribution grid to meet its
221 core functions. Specifically, we explain how we invest to maintain and improve grid
222 capabilities; perform corrective maintenance such as repairs and replacements; invest to
223 serve new business connections for new customers; relocate facilities to support federal,
224 State, county, and municipal improvement projects; and expand our overall capacity to
225 address observed load growth and system operability needs. We also explain how we
226 ensure our system performs at its best to address distribution system degradation and target
227 continuous improvement in reliability, resiliency, safety, and electric grid health. The
228 planning framework also incorporates evaluation of non-wire alternative solutions
229 (“NWAs”) including energy storage, PV, and demand response to meet grid needs. We
230 also include our load forecast in this Chapter.

231 **Chapter 3** provides an overview of the distribution system that ComEd operates
232 today, describes the current operating conditions, and details the major future challenges
233 and risks to the continued safe, reliable, and affordable operation of the grid. We explain
234 how most of ComEd’s existing grid infrastructure was designed and deployed before the
235 recent wide-scale integration of DERs or the recent rise in electrified transportation. As a
236 result, ComEd operates a substantial amount of aged equipment, and spends considerable
237 amounts on a range of programs and initiatives to maintain the condition of its distribution

circuit and substation equipment. While our investments and spending have resulted in sustained and significant reliability improvements, further investment is required to maintain this level of performance to address emerging risks from climate change and security threats, and support the increasing adoption of technologies that will allow achievement of a decarbonized energy future.

Chapter 4 describes the capabilities and technologies for ComEd’s vision of the future grid that will address the ongoing and future challenges identified in Chapter 3. Future operating capabilities, such as advanced analytics capabilities and deployment of additional infrastructure (*e.g.*, sensors, communications, and enterprise systems) to collect and process granular data including at the service transformer and DER level, is critical for a seamless integration of new energy technologies and NWAs. Additionally, monitoring and managing in real-time thousands of DERs, electric vehicle charging stations, and other intelligent devices to operate the grid in a safe, reliable, equitable, and cost-effective way will require sophisticated information technology systems, such as an Advanced Distribution Management System (“ADMS”) and a Distributed Energy Resource Management System (“DERMS”) to oversee the entire service territory.

Chapter 5 discusses ComEd’s distribution system investment plan, which is intended to address multiple objectives, including traditional power delivery goals like safety, affordability, reliability, and resiliency, along with new and evolving targets that support Illinois’ energy policy goals, including those described in CEJA. Among these are integrating additional DERs, supporting beneficial electrification, promoting equity, creating jobs and economic opportunities, and enhancing resilience against the impacts of climate change, and emerging cyber and physical threats. The material in this chapter

describes how additional investments are required to maintain high levels of system performance while evolving the grid to meet future energy needs and to satisfy customer expectations.

Finally, **Chapter 6** describes how ComEd will continue and expand our commitment to delivering in our communities. The communities in ComEd's service territory have benefited from our past investments that support affordable and reliable energy delivery, and ComEd is dedicated to ensuring that these benefits will continue. This final chapter will also describe the steps ComEd takes to incorporate feedback from its stakeholders into its planning processes, how that feedback informs investment decisions, and how those investments fit into ComEd's commitment to deliver equitable, reliable, resilient, and affordable power to the communities we serve.

The Grid Plan includes a number of appendixes, that contain additional details and data supporting the Grid Plan. Notably, Appendix A sets forth data on all of the investments described in Chapter 5 of the Grid Plan.

C. ComEd's Grid Plan Meets the Statutory Requirements

Q. Does CEJA contain requirements regarding the design of ComEd's Grid Plan?

A. Yes. Although I am not a lawyer, I understand that CEJA requires ComEd's Grid Plan to be designed to meet 11 separate goals, which are found in subsection (d) of Section 16-105.17 of the Act. I further understand that CEJA contains a detailed list of contents that ComEd's Grid Plan must include, which are found in subsection (f)(2) of Section 16-105.17 of the Act.

Q. In your professional opinion, does ComEd's Grid Plan include information that meets these statutory requirements of Section 16-105.17 of the Act?

A. Yes. In my professional and nonlegal opinion, ComEd's Grid Plan includes information that meets those statutory requirements. The following table shows which subsections of Section 16-105.17(f)(2) are addressed in which chapters of the Grid Plan. In addition, ComEd Ex. 5.02 contains a table with a more detailed cross reference between the statute and the sections of the Grid Plan.

REQ	Grid Plan Requirements	Primary Chapter Where Requirement is Addressed
A	Provide description of distribution system planning process: Describe role of utility personnel and departments; summarize stakeholder meeting process	Chapter 2
B	Provide detailed description of current distribution system operating conditions: Describe system capacity, miles of overhead and underground lines, location of existing DERs	Chapter 2 and Chapter 3
C	Provide financial data for prior 5 years investments in distribution system and 5-year forecast: Detail investments in distribution system for previous 5 years and forecast next 5 years of investment	Chapter 5
D	Provide system data on DERs: Nameplate capacity, current deployment, geographic distribution of interconnected DERs	Chapter 3
E	Discuss hosting capacity and interconnection requirements: Make mapping and geographic information system (GIS) analysis of hosting capacity available on website; discuss interconnection	Chapters 2 and 4
F	Identify and discuss scenarios considered, including DER scenarios: Scenarios to include discussion of how developed and cover at least 5-year forecast	Chapters 3, 5, and 6

G	Describe evaluation of short- and long-term benefits and costs of DERs: Results of evaluation to inform use of NWA and may be used to evaluate rebates	Chapters 4 and 5
H	Describe long-term distribution system investment plan: Description of capital investments for 5-year forecast; include all projects costing \$3 million or more	Chapters 1, 5, and 6
I	Provide description of historic distribution system and future plan projections	Chapter 5
J	Discuss detailed plan for meeting affordability and equity performance metrics: Include efforts to bring 40% of benefits to low-income and environmental justice communities	Chapter 5
K	Discuss identification of potential cost-effective solutions from third-party owned investments: Include DER procurements, rate design options, non-wires alternative (NWA), third-party owned resources	Chapters 2 and 4
L	Provide detailed description of interoperability plan: Manner in which utility's investments will work together and exchange information; implement open standards	Chapter 4

289 Q. **Does ComEd's Grid Plan contain a detailed plan for achieving the performance**
290 **metrics that were approved by the Commission for ComEd?**

291 A. Yes, Section 5.5 of the Grid Plan describes how ComEd plans to achieve the performance
292 metrics approved by the Commission in Docket No. 22-0067. In that docket, the
293 Commission approved the following seven metrics: (1) Overall Reliability and Resiliency
294 based on SAIDI, (2) EJ and R3 Communities Reliability and Resiliency, (3) Peak Load
295 Reduction, (4) Supplier Diversity, (5) Affordability, (6) Interconnection Timeliness, and
296 (7) Customer Service.

ComEd witness Mondello (ComEd Ex. 8.0) describes and explains how ComEd plans to meet the two Reliability and Resiliency performance metrics, as well as the Interconnection Timeliness and Peak Load Reduction performance metrics; ComEd witness Owens (ComEd Ex. 10.0) addresses the Affordability and Customer Service performance metrics; and ComEd witness Baranek (ComEd Ex. 11.0) addresses the Supplier Diversity performance metric.

D. The Grid Plan Will Promote Clean Energy Jobs and Workforce Development

Q. Has ComEd estimated the incremental number of jobs that would be created as a result of the investment activity proposed in the Grid Plan?

A. Yes. ComEd's Grid Plan is expected to result in up to 2,700 additional full-time equivalent ("FTE") jobs over the Grid Plan period (2023-2027), which includes the people executing the investment and those supporting them.

Q. How did ComEd create its estimate of incremental jobs?

A. ComEd's estimate of direct and indirect incremental jobs is based on the methodology ComEd has used in the annual jobs reports required by EIMA. *See* 220 ILCS 5/16-108.5. ComEd compared a baseline scenario of spending on jurisdictional distribution plant additions that was based on actual distribution system investment spending in 2020 and 2021 and projected distribution system investment in 2022, with the jurisdictional distribution plant additions that are proposed in the Grid Plan. Consistent with ComEd's general split of labor versus material, ComEd attributed 75% of the difference between those two scenarios to incremental labor. ComEd then identified, based on actual data from the peak EIMA investment year in 2015, the FTEs required per million dollars of

incremental investment and applied that ratio to the difference between the baseline scenario and the investments proposed in the Grid Plan to generate the estimate.

Q. Can you describe any examples of partnerships around workforce development projects?

A. Yes. ComEd's workforce development programs and initiatives are described in the Grid Plan Section 6.1.4, and Appendix D-3, Economic and Workforce Development Activities. We are focused on building a diverse pipeline of talent for careers in the trades and clean energy across our territory with an emphasis on under-resourced communities, including the Infrastructure Academy, Technical Skills Academy, Center for Energy Workforce Development and National Urban League's Apprenticeship program, Big Shoulders - Powering Our Future, and the Clean Energy Training Hub.

Q. Please describe the purpose and work scope for Clean Energy Training Hub.

A. ComEd will develop a Clean Energy Training Hub on the West side of Chicago to prepare, train, and reskill individuals for Illinois' decarbonization energy transition. This program will engage government, education, labor, industry partners, and community-based organizations to provide input throughout the design, recruitment, training, support and job placement phases of the program so that the program's targeted participants, individuals from EIECs, can easily participate in, and will benefit from, the program.

The proposed Clean Energy Training Hub will offer training and certifications in categories including skilled trades (electrical line work), energy efficiency, EV maintenance, EV infrastructure readiness, fiber installations, renewable energy installations (solar, battery storage, etc.), building electrification, technical engineering

support, business operations, and related small business incubator programs. The proposed program will include tuition assistance and a stipend provided to each participant for wrap-around support services (transportation, housing, legal, childcare assistance, personal protective equipment (“PPE”), and tools) and will allow approximately 500 participants annually to graduate from the Clean Energy Training Hub.

Q. Is ComEd proposing additional clean energy training programs?

A. Yes. In addition to the Clean Energy Train Hub facility, ComEd will work with the City Colleges of Chicago to develop more expansive clean energy- and electrification-focused training and educational support on the South side of Chicago. This will be accomplished by expanding the partnership model that ComEd has already in place through Dawson Technical Institute (a part of Kennedy King College).

III. COMED’S APPROACH TO RESILIENCY AND PHYSICAL AND CYBER SECURITY

Q. How does the Grid Plan demonstrate ComEd’s commitment to ensuring the physical security of grid assets?

A. The physical security of grid assets is a fundamental aspect of ComEd’s routine operations. The physical and cyber security of our systems and facilities are of the utmost importance to provide a safe, reliable, and affordable grid. For example, our System Performance investments maintain and improve physical substation security and reduce fire-related risk, while investments through programs like the Substation Hardening Program and the Substation Security Program include proactively replacing physical systems and hardening

362 substations against threats and weather events. Section 3.3.3 of the Grid Plan further
363 describes ComEd's approach to ensuring the physical security of grid assets.

364 Q. **Does the Grid Plan describe how ComEd promotes resiliency in its system?**

365 A. Yes. The Grid Plan describes how ComEd's investments in and focus on grid resiliency
366 — generally defined as the ability to withstand and recover quickly from an event that
367 significantly impacts the grid — allow ComEd to reliably deliver decarbonized and
368 affordable energy for families, businesses, and critical services across Northern Illinois.
369 ComEd's OCC and the EP teams maintain an extensive Emergency Response Organization
370 ("ERO") year-round to handle the disruptive events, such as severe weather, as well as
371 emergent threats from climate change, cyber, and other domains. The Grid Plan also
372 describes how ComEd will not only enhance the resiliency of physical infrastructure but
373 also take meaningful steps to build resiliency in the communities it serves.

374 Q. **How does ComEd prepare for emergencies and storms?**

375 A. ComEd maintains a robust ERO structure. This includes an "Incident Command System,"
376 a best-practice method for responding to and managing emergencies that has been used by
377 the U.S. Department of Defense, State of Illinois, and local governments. We monitor
378 storm fronts as they approach and move across our service territory, which allows ComEd
379 to prepare in advance and helps assure that our response to storm systems is swift and
380 coordinated. We also conduct summer and winter seasonal readiness activities to ensure
381 our operational teams are ready for changing conditions, and we participate in state-wide
382 emergency response exercises and tabletop exercises to enhance private and public

partnership to better prepare our response on behalf of the residents of Illinois and ComEd customers during a statewide emergency.

Q. Can you describe ComEd's storms and other extreme weather response and restoration approaches?

A. The primary focus of ComEd's storm response is having adequate front-line personnel to assess and repair damage and to direct those crews to outages efficiently. ComEd uses its entire workforce when major storms hit, and we frequently employ local contractors to aid in the response. The size and intensity of the staffing levels and restoration effort in total match the severity of the storm and is limited principally by the available resources and the crews' ability to access the damage. Depending on the size of the event, we may call on crews from other utilities or contractors from other states to assist (*i.e.*, mutual assistance). ComEd is a member of three regional mutual assistance groups throughout the United States, which serve as critical and effective restoration resources for utility companies when storms, hurricanes, earthquakes, or other natural disasters occur that cause significant damage creating widespread power outages affecting customers that can only be addressed by additional line workers. Section 6.1.2 of the Grid Plan provides a detailed description of ComEd's processes and assets used when responding to storms and other extreme weather events.

Q. What are some of the key challenges facing ComEd to ensure the grid is safe and secure?

A. As the utility sector digitizes, cyber-attacks are increasing in volume, sophistication, and frequency. Additional new threats to the grid involve physical attacks, such as sabotage of

critical facilities like substations. Like all businesses, ComEd faces baseline cyber risks to its information technology (“IT”) systems, including those systems responsible for remote access and control, communications, and customer information. In the future, the anticipated high penetration of DERs and other intelligent electronic devices (such as smart meters or sensors) will pose additional cybersecurity challenges for the grid.

Q. **You mentioned that the expected increase penetration of DERs and other intelligent electronic devices will pose additional cybersecurity challenges for the grid. How do utilities like ComEd plan for security risks associated with this increased deployment?**

A. The deployment of these technologies should be accompanied by the implementation of cybersecurity measures to safeguard utility systems against potential human-made disruptions, including attacks from bad actors. It is more effective to design cybersecurity measures early in the planning process than face the consequence of inadequate security designs and safeguards later. DERs connected at the grid edge need to be consistent with power system security operation requirements. Thus, it is vital to review and assess if proper Information Technology & Operational Technology (“IT/OT”) data governance, architecture, control, and risk mitigation measures are in place. Cybersecurity measures must consider hierarchical deployment as balancing risk with potential cyber threats that will be an essential challenge for the power industry.

To protect its customers and communities and to harden the grid against cyber and physical attacks, ComEd is committed to bolstering the cyber and physical security measures of the system. ComEd manages these risks by utilizing a risk-based, intelligence-

427 driven security approach to implementing a comprehensive set of cyber and physical
428 security controls, in line with the National Institute of Standards and Technology's
429 Cybersecurity Framework to effectively identify, protect, detect, respond to and recover
430 from a spectrum of threats, mitigating the likelihood of successful attacks and their
431 potential impacts.

432 **IV. CONCLUSION**

433 **Q. Does this complete your direct testimony?**

434 **A. Yes.**